



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,776	06/30/2003	Kei Yamamoto	204552028900	8129

7590 05/17/2005
Barry E. Bretschneider
Morrison & Foerster LLP
Suite 300
1650 Tysons Boulevard
McLean, VA 22102

EXAMINER

FLORES RUIZ, DELMA R

ART UNIT PAPER NUMBER

2828

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,776	YAMAMOTO ET AL.	
	Examiner	Art Unit	
	Delma R. Flores Ruiz	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-22 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/30/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 – 4 are recites the limitation "said upper and lower clad layers contain AL, and a value of z is smaller than value of an Al mole fraction of said upper and lower clad layer. In claim 1 don't mention clad materials " in 3 and 4 lines in claim 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 is recites the limitation "a value of z at least a portion in contact with a barrier layer of said upper and/or lower guide layer is smaller than 0.4. In claim 1 don't mention barrier materials " in 3 and 4 lines in claim 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ekawa (6,853,661) in view of Serreze (5,222,090) further in view of Hara et al (4,794,611).

Regarding claim 1, 2, Ekawa discloses semiconductor laser comprising; a lower clad layer (see Fig. 3, Character 2) a lower guide layer (see Fig. 3, Character 3), an active region (see Fig. 3, Character 6) and upper guide layer (see Fig. 3, Character 9) and an upper clad layer (see Fig. 3, Character 10) are supported by GaAs substrate ((see Fig. 3 Character ,) Column 9, Lines 15 – 17) the active region having a quantum well (see Fig. 3, Character 6b) structure in which one or more well layers and barrier layers (see Fig. 3, Character 6a) are stacked, wherein said one or more well layer and said barrier layer are formed of any one of InGaP, InGaAsP and GaAsP (Column 3, Lines 27 – 42).

Ekawa discloses the claimed invention except for semiconductor laser device having an oscillation wavelength of larger than 760nm and smaller than 800nm. It would have been obvious at the time of applicant's invention, to combine Serreze of teaching a semiconductor laser device having an oscillation wavelength of larger than 760nm and smaller than 800nm with semiconductor laser because It would have been obvious to one of ordinary skill in the art at the time the invention was made to semiconductor laser device having an oscillation wavelength of larger than 760nm and smaller than 800nm (Column 1, Lines 63 – 68), since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Ekawa discloses the claimed invention except for upper and/or lower guide layer is formed of $\text{Al}_z \text{Ga}_{1-z} \text{As}$ ($0.20 < z < 1$) and a value of z representing a mole fraction of Al in the group-III elements of said upper and/or guide layer is larger than 0.25. It would have been obvious at the time of applicant's invention, to combine Hara of teaching a upper and/or lower guide layer is formed of $\text{Al}_z \text{Ga}_{1-z} \text{As}$ ($0.20 < z < 1$)) and a value of z representing a mole fraction of Al in the group-III elements of said upper and/or guide layer is larger than 0.25 with semiconductor laser because it would have been obvious to one of ordinary skill in the art at the time the invention was made to upper and/or lower guide layer is formed of $\text{Al}_z \text{Ga}_{1-z} \text{As}$ ($0.20 < z < 1$) (Column 1, Lines 23 -25)) and a value of z representing a mole fraction of Al in the group-III elements of said upper

Art Unit: 2828

and/or guide layer is larger than 0.25 (Column 2, Lines 39 – 40) , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claim 6, Ekawa discloses a one or more well layers have a compressive strain (Column 3, Lines 27 - 30 and Column 9, Lines 8 –12).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ekawa (6,853,661) in view of Serreze (5,222,090) further in view of Hara et al (4,794,611), further in view of Kuroda et al (5,313,073)

Regarding claim 7, Ekawa in view of Serreze further in view of Hara discloses the claimed invention except for barrier layer have a tensile strain. It would have been obvious at the time of applicant's invention, to combine Kuroda of teaching a barrier layer have a tensile strain with semiconductor laser because the responsivity and strain are considerably improved by using barrier that are strained, typically under tension. It is this tensile strain in the barriers that gives rise to the improved properties, while enabling the use of incident light normal to the detecting plane of the detector by using the valence band (Column 2, Lines 44 –50).

Art Unit: 2828

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ekawa (6,853,661) in view of Serreze (5,222,090) further in view of Hara et al (4,794,611), further in view of Behfar-Rad (5,075,743).

Regarding claim 8, Ekawa discloses the claimed invention except for semiconductor laser used as a light emitting device. It would have been obvious at the time of applicant's invention, to combine Behfar-Rad of teaching a semiconductor laser used as a light emitting device with semiconductor laser because LED (light emitting device) operate when a sufficient electrical potential is applied across their layers via the metallization (Column 3, Lines 55 – 61).

Allowable Subject Matter

Claims 9 – 22 are allowed.

The following is an examiner's statement of reasons for allowance: Claim 9 recites a semiconductor laser structure including the specific structure limitation of barrier layer are formed of an $\text{In}_{1-x}\text{Ga}_x\text{As}_{1-y}\text{P}_y$ having a band gap energy larger than that of said well layers, and there hold relationship that $0 < x < 1$; $0.02 < y < 0.75$ and $|(a_2 - a_1) / a_1| * 100 \leq 0.65$, where a_1 is lattice constant of said one or more well layers, and a_2 is lattice constant of said barrier layers, which is neither anticipated or disclosed

Art Unit: 2828

nor suggested in any piece of available prior art, which is neither anticipated nor obvious over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Flores Ruiz whose telephone number is (571) 272-1940. The examiner can normally be reached on M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) -272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2828

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Delma R. Flores Ruiz
Examiner
Art Unit 2828



Min Sun Harvey
Supervisor Patent Examiner
Art Unit 2828

DRFR/MH
May 13, 2005